

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number  
**WO 2004/058404 A3**

(51) International Patent Classification<sup>7</sup>: **G01N 21/00**,  
1/30, 33/48

(21) International Application Number:  
PCT/US2003/040591

(22) International Filing Date:  
19 December 2003 (19.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/435,601 20 December 2002 (20.12.2002) US

(71) Applicant (for all designated States except US): **DAKO-  
CYTOMATION DENMARK A/S** [DK/DK]; Produk-  
tionsvej 42, DK-2600 Glostrup (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KEY, Marc**  
[US/US]; 290 Saddle Lane, Ojai, CA 93023 (US). **FEIN-  
GOLD, G** [US/US]; 5242, Austin Road, Santa Barbara,  
CA 93111 (US). **WELCHER, Rosanne** [US/US]; 1175  
Church Street, Ventura, CA 93001 (US).

(74) Agent: **SANTANGELO, Luke**; Santangelo Law Offices,  
P.C., Third floor, 125 South Howes, Fort Collins, CO 80521  
(US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

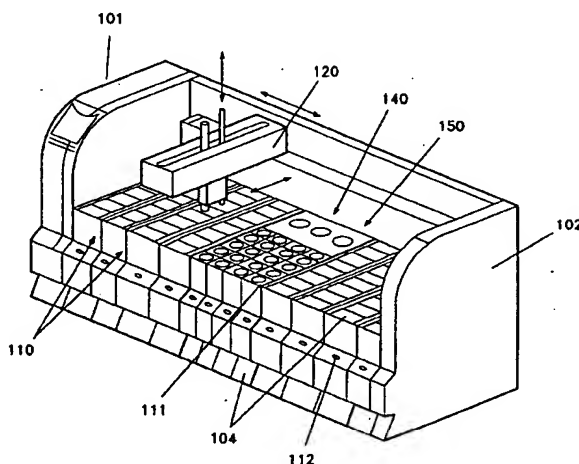
(84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: **ENHANCED SCHEDULING SAMPLE PROCESSING SYSTEM AND METHODS OF BIOLOGICAL SLIDE PRO-  
CESSING**



(57) Abstract: A sample processing system (101) that may be automated and methods are disclosed where sample(s) (198) are arranged on a carrier element (197) and a process operation control system (171) automatically processes the sample(s) perhaps robotically according to an desired aggregation of event dictated by an input (173). Alteration of an initial aggregated event topology may be accepted while the system is processing an initial aggregation and varied-parameter robotic control simulation functionalities (606) may be accomplished to determine an enhanced sequence for processing. Suggested operator actions may be displayed that might further enhance the scheduling of the altered aggregated event topology together with an automatic operator need prompt (608) that may inform an operator of a need for a particular action in order to accomplish the desired tasks. Reversibility to proposed changes may be made available so that an operator may avoid having to activate proposed changes if they cause a processing result that is not acceptable.

WO 2004/058404 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(88) Date of publication of the international search report:  
10 September 2004

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/40591

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 21/00, 1/30, 33/48

US CL : 422/67; 435/40.5, 286.1, 287.3, 288.7; 702/19

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 422/67; 435/40.5, 286.1, 287.3, 288.7; 702/19

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,839,091 A (RHETT et al.) 17 November 1998, see abstract.	1-158
A	6,352,861 A (COPELAND et al.) 05 Marh 2002, see "Summary of Invention" section.	1-158

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

08 July 2004 (08.07.2004)

Date of mailing of the international search report

28 JUL 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Robert Warden

Telephone No. 571-272-1700